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ARISTOTLE'S PHILOSOPHY OF SOUL

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DEBATE CONTINUES OVER WHETHER AN "Aristotelian philosophy of mind" is still credible.¹ Recent commentators wonder whether Aristotle's view lies somewhere in the constellation of modern theories of mind, or whether he might point to an uncharted theory. Because he viewed his own account as an alternative to both Platonic dualism and Presocratic materialism, moderns seeking a middle way between Cartesian dualism and reductionist physicalism have looked to Aristotle for inspiration. As Jonathan Barnes observes, "Philosophy of mind has for centuries been whirled between a Cartesian Charybdis and a scientific Scylla: Aristotle has the look of an Odysseus."²

The interpretation of Aristotle is problematic because he discusses what moderns call mental phenomena in the context of his own philosophy of soul (*ψυχή*), which has certain distinctive features. Because he viewed soul as a principle of life, he saw nothing odd about a plant having a soul, although he would have dismissed as absurd the suggestion that a complicated artifact might have a soul. In contrast, many modern philosophers think that computers have as much a claim to consciousness as humans; but the idea that plants have a secret mental life strikes most moderns as bizarre. Moreover, certain problems might not have the centrality for Aristotle which they have for moderns: for example, he would not regard *qualia* and intentionality as necessary features of psychic states, because plants and lower animals do not exhibit them. Also, modern controversies involve notions such as reducibility and scientific laws which lack clear correlates in Aristotle. In view of all this it might be concluded

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¹See especially Myles Burnyeat, "Is an Aristotelian Philosophy of Mind Still Credible?" in *Essays on Aristotle's De Anima*, ed. M. Nussbaum, and A. O. Rorty (Oxford: Clarendon Press, 1992), 15–25, who answers in the negative. Several of the essays in Nussbaum and Rorty take up Burnyeat's challenge.

²Jonathan Barnes, "Aristotle's Concept of Mind," *Proceedings of the Aristotelian Society* 72 (1971): 114.

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that Aristotle's psychology is *sui generis* or incommensurable with modern theories of mind.

Yet such difficulties are unavoidable whenever one philosopher tries to understand another with a different conceptual scheme. We may be able to offer a plausible reconstruction of Aristotle's psychology by drawing on some of our own concepts. One method is to find counterparts in another framework to concepts of our own: even when there are different conceptual distinctions and interconnections, we still may be able to detect important overall similarities between the two networks of ideas. It would, of course, be incredible and suspicious if such a reconstruction turned out to resemble any modern concept of mind too closely. But this technique might shed valuable light on Aristotle's theory or modern theories or both.

In using the method of reconstruction, however, let us not forget that what we think of as Aristotle's philosophy of mind is only part of what he would have thought of as his philosophy of soul. We should not emulate Heinrich Schliemann ploughing headlong through the mound of Hissarlik in pursuit of Priam's Troy. We should try to respect and understand the broader framework to which Aristotle's discussions of mind belong.

I

A satisfactory exegesis of Aristotle's philosophy of soul must pay close attention to *De Anima* 2.1, where he says that he is trying to determine what is the soul and what is the most common account of the soul.³ By "most common account" (κοινότατος λόγος), he evidently means the most inclusive account, an account of what souls of all kinds have in common.⁴ Although his discussion is very abstract, we may reasonably expect it to set parameters of a defensible interpretation. This account of the soul has two interrelated stages: in the first the soul is an actualization,⁵ and in the second it is an essence.⁶

The first stage begins with the category of substance (οὐσία), which is distinguished into three types: (1) matter, which is

³ *De Anima* 2.1.412a4–6.

⁴ By this, he could mean the souls of different kinds of living things or the different parts or powers of the soul. It seems most likely from what follows that he means "most common" in both of these senses. Cf. καθόλου at 2.1.412b10.

⁵ *De Anima* 2.1.412a6–b9.

⁶ *De Anima* 2.1.412b10–413a3.

intrinsically or in itself not a this (τόδε τι); (2) shape or form, through which we call something a this; and (3) the composite of matter and form.⁷ This analysis is immediately related to the distinction between actualization and potentiality: "Matter is potentiality (δύναμις) and form is actualization (ἐντελέχεια)."⁸ Actuality has two levels. This is briefly explained in *De Anima* 2.1 by an analogy with knowledge, which is developed more fully in *De Anima* 2.5.417a21–b2: Human beings are knowers in the potential sense because they are the sort of beings who have knowledge. They are knowers at the first level of actuality when they have knowledge—for example, the grammatical knowledge that subject and verb should agree in number. They are knowers at the second level of actualization when they are actually aware of or using this knowledge—for example, in correcting the sentence, "They is going."

Aristotle next remarks that bodies are especially believed to be substances, especially natural bodies (τὰ φυσικά, sc. σώματα), for these are principles of other bodies. This recalls the account of nature in *Physics* 2.1, which distinguishes between things that exist by nature (including animals and their parts, plants, and simple elements) and things that exist by other causes (including a bed and a cloak, which exist by art).⁹ He clearly has this account in view, because a few lines later¹⁰ he refers to the *Physics* 2.1 concept of a natural body as having a nature (φύσις), an internal principle or source of movement and rest.¹¹ Aristotle divides natural bodies into living and nonliving: by "life" he means self-nutrition, growth, and decay. Every natural body which shares in life is a substance.¹²

Aristotle declares that a natural body is a substance in the third sense of a composite (συνθέτη), and that the living body and soul stand to each other as matter (ὕλη) to form (εἶδος, μορφή). This is customarily referred to as Aristotle's *hylomorphic* analysis of body

⁷ *De Anima* 2.1.412a6–9.

⁸ *De Anima* 2.1.412a9–11.

⁹ The *Physics* account of natural body is explicitly invoked later on at *De Anima* 2.1.412b16–17.

¹⁰ *De Anima* 2.1.412b6–7.

¹¹ This internal principle of movement or rest—also called "an innate impulse for change" (ὁρμήν . . . μεταβολῆς ἐμφυτον)—is identified as the nature (φύσις) of a thing in *Physics* 2.1.192b8–23. Aristotle adds the qualification that the nature of X is a cause by itself and not accidentally: that is, it must be a cause in virtue of what X is. If Hippocrates cures himself, this does not happen by nature, even though the art of medicine is present in Hippocrates. For Hippocrates merely happens to be a doctor; he is not a doctor intrinsically. See also *Physics* 2.1.192b22–32.

and soul. For the body is a subject and matter, and is not an attribute of a subject (καθ' υποκειμένου). Hence, the soul is not the body¹³; rather, the soul is substance in the sense of form of a natural body which potentially partakes of life. Substance in this sense is a first-level actualization, however, since having a soul corresponds to knowledge as an actual state and being awake corresponds to the exercise of such knowledge. So the soul is the first-level actualization of a natural body which potentially partakes in life.¹⁴ Aristotle does not defend here the crucial premiss that the body is subject and matter, but, as we shall see, he does subsequently argue for it.

Next he characterizes the body which potentially partakes of life as an *organic* body.¹⁵ An organic body is able to use its own parts as tools (ὄργανα) the way a plant uses roots like a mouth to take in food. The plant example underscores that Aristotle is offering an account which is common (κοινόν) to all souls: namely, the soul is a first-level actualization of a natural organic body.¹⁶

The second stage of Aristotle's general account of soul emphasizes its role as the essence (τὸ τί ἦν εἶναι) of the natural body.¹⁷ First, "if a tool like an axe were a natural body, the substance of the axe would be the essence of the axe, and this would be its soul. If this soul were separated, it would no longer be an axe except in a homonymous sense."¹⁸ Aristotle's point is evidently that the account (λόγος) of the axe includes the function of cutting, and the axe which lost this function would no longer have this account.¹⁹ The axe does not have a soul, however, because it is not a natural body with an

¹² *De Anima* 2.1.412a13–16. It is noteworthy that Aristotle uses the term φυσικόν for bodies which have internal intrinsic principles of change, including living organisms. Although φυσικόν is the ancestor of the modern term "physical," Aristotle uses it in a very different way: a horse or a geranium is a φυσικόν body, but a bed or cloak is not. Alan Code and Julius Moravcsik, "Explaining Various Forms of Living," in *Essays on Aristotle's De Anima*, ed. M. Nussbaum, and A. O. Rorty (Oxford: Clarendon Press, 1992), argue convincingly that the modern concept of physical is not equivalent to Aristotle's idea of φυσικόν and is indeed alien to his thought.

¹³ Reading οὐκ ἂν εἴη τὸ σῶμα ἢ ψυχὴ at *De Anima* 2.1.412a17 with manuscript X and Philoponus. The text is difficult: τὸ is omitted in manuscript U and in Themistius and Alexander *apud* Philoponus, and ἢ is missing in manuscripts C and e and in Simplicius. At any rate τὸ must be understood, given the following γὰρ clause.

¹⁴ *De Anima* 2.1.412a16–28.

¹⁵ *De Anima* 2.1.412a28–b6.

¹⁶ *De Anima* 2.1.412b5–6.

¹⁷ *De Anima* 2.1.412b10–11.

¹⁸ *De Anima* 2.1.412b12–15.

internal principle of change. The second analogy is with a bodily organ: "if the eye were an animal, its sight would be its soul; for this is the eye's substance corresponding to the account. But the eye is the matter of sight, and if sight is taken away, it is no longer an eye, except in a homonymous sense, like a stone or a painted eye."²⁰ He then draws an analogy between the part and the whole living body. The implied conclusion is that the soul is the essence of the body, and if the soul were taken away from the body it would be a body only homonymously.

Aristotle restates the eye analogy in hylomorphic terms.²¹ The pupil of the eye has the potentiality to see; sight is its first-level actualization in the sense of the power (*δύναμις*) of the organ to see, and seeing its second-level actualization in the sense of the exercise of this power. Correspondingly, the body is potentially alive; the soul is its first level-actualization, and being awake its second-level actualization. He finally restates the analogy in hylomorphic terms: "Just as the pupil and sight are an eye, so the soul and the body are an animal."²²

¹⁹ See *Politics* 1.2.1253a20–5 which uses the premise, "everything is defined in terms of its function and power," to argue that a hand or foot separated from the whole animal should no longer be called a hand or foot except homonymously. See also *Parts of Animals* 1.1.640b35–641a6.

²⁰ *De Anima* 2.1.412b18–22.

²¹ *De Anima* 2.1.412b27–413a2.

²² *De Anima* 2.1.413a2–3. Aristotle's implicit claim that his two accounts of soul are equivalent has been challenged by J. L. Ackrill, "Aristotle's Definitions of *psyche*," *Proceedings of the Aristotelian Society* 73 (1972–3): 119–33. The first account of soul as actualization—and especially the analogy of the wax and seal (412b7)—implies that the body can be identified in such a way that it could be conceived as existing without the soul, but the second account of soul as essence relies on the homonymy argument, which implies that the body and its organs could not exist without the soul. However, this objection can be met by noting that Aristotle speaks of the body in different ways in *De Anima* 2.1. When he employs the homonymy argument, he is speaking of an actually living natural body such as an animal. Accordingly he compares the axe to a natural body and the eye to an animal. However, in his final analogy, which again treats soul as a first-level actualization, he compares sight to the soul, the pupil to the body, and the eye to an animal. Thus, the soul is the essence of the natural body, that is, a body which has an internal principle of change or rest. When he speaks of the body as the subject of the soul which is its actualization or substance, he is considering an aspect of the natural body: namely, having the potential to live and use organs. In so far as it is potentially alive, it is a body in the sense of a component of the natural body. As such it is presumably thought of as composed of matter, and, ultimately, composed of the basic elements: earth, air, fire, and water. Although Aristotle speaks of the body in two different ways, his account is consistent.

In the following chapter (*De Anima* 2.2) Aristotle offers a justification of his definitional account (ὁριστοκὸς λόγος) of the soul.²³ The key idea is that living things possess internal powers or principles by which they qualify as natural bodies of the sort assumed in the general account of the soul. He first remarks that ensouled things are distinguished by living, and that living is said in many ways, and any of the following is sufficient for living: intellect (νοῦς), perception (αἰσθησις), locomotion and rest, and nutritive movement and growth and decay.²⁴ This explains the belief that plants are alive: they evidently possess an internal power (δύναμις) and principle (ἀρχή) by means of which they grow in all directions.²⁵ Moreover, the nutritive power can be separated from the others, but in mortal things the other powers cannot be separated from it.²⁶ Plants have only this power of the soul (δύναμις ψυχῆς), but, he points out, some animals with the power of perception have only the sense of touch and lack other senses.

This presents a new difficulty: if being alive involves distinct powers, and different species have different sets of powers, how can there be one common definition of the soul? Aristotle argues that soul will have one account (λόγος) in the way that figure does. Just as there is not a figure apart from the triangle, rectangle, and so forth, so there is not any soul apart from the aforementioned powers. As in the case of figure, there might be a common account (λόγος κοινός) of soul, but it would be absurd to seek such a definition and neglect definitions peculiar to actual entities (such as plants or animals), that is, definitions which correspond to proper and indivisible species. Therefore, in addition to the common definition of soul—the one set forth in *De Anima* 2.1—one should seek specific definitions of the soul of plants, of lower animals, and of human beings.²⁷

The psychic powers constitute a series such that each is a necessary condition for its successor. In plants the nutritive power occurs alone, but the perceptive power never occurs without the nutritive. There is a similar interdependence in the perceptual faculty itself, where the sense of touch is basic. Further, some things able to perceive also have the locomotive power, while others do not. "Finally and most rarely, some have reasoning and cognition. For perishable

²³ *De Anima* 2.2.413a11–20.

²⁴ *De Anima* 2.2.413a20–5.

²⁵ *De Anima* 2.2.413a25–31.

²⁶ *De Anima* 2.2.413a31–2.

²⁷ *De Anima* 2.2.414b20–8, 32–3.

beings which have reasoning also have the other powers, but it is not the case that all the beings with the other powers also have reasoning."²⁸ A complete account of soul must include an account of each of the powers and in addition explain their interlocking relationships.²⁹ A satisfactory interpretation of Aristotle must therefore illuminate his view of the nutritive soul, since this will provide a context for his discussion of the other psychic powers. The nutritive soul will, consequently, be a principal concern of this essay.³⁰

II

Aristotle rejects the doctrines of Plato and the Pythagoreans which assert that the soul was a substance which could leave a human body at death and enter another body of a human being or even of a lower animal or plant. Aristotle complains that these philosophers contended that a soul could be fitted into a body without explaining the cause or the condition of the body into which it allegedly entered.³¹ They did not recognize that each body has a peculiar form and shape. Aristotle compares them to "someone who says that the art of carpentry could be implemented in flutes; for an art must use its instruments, and the soul must use its body."³² This implies that a soul, like an art, has a distinctive function or set of functions, to which the body must be adapted. Aristotle criticizes these earlier theorists for failing to grasp that the soul is the actuality of the body, and that "the actualization of each thing naturally comes to be in that which has the potentiality [for it] and in the appropriate matter."³³

This repudiation of traditional dualism might be taken to imply that Aristotle would embrace a psychological theory of materialism, the view that the soul is basically material. This interpretation might also seem to be supported by his hylomorphic account in *De Anima* 2.1, where body stands to soul as matter (ύλη) to form (μορφή). Aristotle advises us not to inquire whether the soul and the body are

²⁸ *De Anima* 2.4.415a28–415a10.

²⁹ *De Anima* 2.4.415a12–13, see also 414b34–415a1.

³⁰ I discuss Aristotle's views on the perceptive soul in a forthcoming essay, "Aristotle's Philosophy of Perception," in *Boston Area Colloquium in Ancient Philosophy*, ed. J. J. Cleary and W. Winans (forthcoming). I also plan to treat the appetitive soul and the intellect in the future.

³¹ *De Anima* 1.3.407b15–17.

³² *De Anima* 1.3.407b24–6.

³³ *De Anima* 2.2.414a25–7.

one, just as we should not ask whether the wax and the seal are one, or generally whether the matter of each thing and that of which it is the matter are one. "For although one and being are said in many ways, that which is said in the leading way is the actualization."³⁴ Since he has defined the soul as the actualization of the natural body, this implies that the soul will be one with the body. Although he does not spell out the sense of "one" he has in mind, his position seems closer to materialism than it is to the dualistic doctrines of Plato and the Pythagoreans.

However, as is so often the case, Aristotle's claims are guarded and nuanced. The general account of *De Anima* 2.1 concludes, "It is not unclear, therefore, that the soul is not separable from the body; or else certain parts of the soul are not separable, if the soul is naturally divisible; for the actuality of some belongs to the parts themselves." Although this seems to rule out dualism, he adds: "But nothing prevents some parts from being separable because they are not actualizations of any body. Furthermore, it is unclear whether the soul is the actualization of the body just as a sailor is the actualization of a ship."³⁵ The comparison of the soul with a sailor might imply dualism, but it is not clear whether this is the point of his brief, cryptic remark. At any rate he allows here that it is possible for some parts to be separable from the body, if they are not actualizations of bodily parts. Indeed, he elsewhere takes this possibility seriously. After enumerating the different powers of the soul, he comments, "Concerning the intellect and the power of contemplation nothing is evident yet, but it seems to be a different kind (γένος) of soul, and this alone can³⁶ be separated, like the everlasting from the perishable."³⁷ Earlier in *De Anima* he said that "intellect (νοῦς) seems to come to be in [us] as a kind of substance and not to be destroyed."³⁸ And he will later argue—admittedly somewhat obscurely—that because the intellect can think all things, it is reasonable that it is "not mixed with the body," and that it does not have a peculiar material organ like the perceptual faculty.³⁹ Moreover, he will conclude that one thing in the soul is separable, immortal, and everlasting, namely, the productive (or agent) intellect

³⁴ *De Anima* 1.1.412b6–9.

³⁵ *De Anima* 2.1.413a3–9. Omitting ἢ with the manuscripts.

³⁶ Reading ἐνδέχεται with the Oxford Classical Text and most manuscripts. Some manuscripts and Themistius have ἐνδέχασθαι.

³⁷ *De Anima* 2.2.413b24–6.

³⁸ *De Anima* 1.4.408b18–19.

³⁹ *De Anima* 3.4.42918–27.

(νοῦς ποιητικός).⁴⁰ These claims about the intellect pose insurmountable difficulties for an uncompromisingly materialistic interpretation of Aristotle's psychology. On such an interpretation, the alleged separability of the productive intellect can only appear as an aberration or an embarrassing slip by a philosopher whom one recent commentator dubs "every physicalist's ideal role-model."⁴¹

But the primary concern of this essay is not the enigma of νοῦς but the general philosophy of soul to which the account of νοῦς is supposed to belong. We should try to assess materialism as an interpretation of Aristotle's general psychology. If materialists agree that living things have souls, then it seems they hold either that (1) the soul is one or more material components of the body (for example, fire), or that (2) the soul consists of some condition, disposition, or alteration of the material components of the body (for example, blood boiling around the heart).

Elemental Materialism. Aristotle himself dismisses the first version of materialism as absurd, arguing that the soul could neither be a particular element nor be a compound of elements. "For if the soul is fire only such affections as belong to fire *qua* fire will belong to the soul." Hence, we will not be able to explain how the soul learns, remembers, or forgets.⁴² Further, the first version of materialist psychology is inimical to Aristotle's distinction in the *Metaphysics* between a natural substance and a mere heap of material components.⁴³ For if the soul were an element (στοιχεῖον) or material component added to the elements which make up the body, there would merely result a larger heap. A natural body must be a composite of material components and something which is not an element but a form, a cause which organizes the materials into a natural whole. If the soul is to serve as a form or organizing principle, it cannot be a material component.

⁴⁰ *De Anima* 3.5.430a13–25.

⁴¹ See K. V. Wilkes, "Psyche versus the Mind," in *Essays on Aristotle's De Anima*, ed. M. C. Nussbaum and A. O. Rorty (Oxford: Clarendon Press, 1992), 109–27, esp. 125.

⁴² *Generation and Corruption* 2.6.334a10–15.

⁴³ See *Metaphysics* Z.17.1041b11–33. Cf. Richard Sorabji, "Intentionality and Physiological Processes: Aristotle's Theory of Sense-Perception," in *Essays on Aristotle's De Anima*, ed. M. C. Nussbaum and A. O. Rorty (Oxford: Clarendon Press, 1992), 195–225, esp. 48; and Terence Irwin, *Aristotle's First Principles* (Oxford: Clarendon Press, 1988), 291. However, as Robert Heinaman points out, this passage only argues that the form is not an element or material component, not that it is not a component in any sense. See "Aristotle and the Mind-Body Problem," *Phronesis* 35 (1990): 83–102, 88 n. 14.

Central-State Materialism. However, the second version of materialism—that the soul is some condition, disposition, or alteration of the material components within the body—does receive support from some of Aristotle's remarks.⁴⁴ For when he repudiates Platonic and Pythagorean dualism, he agrees with those “who think that the soul is not without a body and that it is not a body; for it is not a body, but something that is *of* a body, and that is why it is *in* a body, and in a body of a certain sort.”⁴⁵ Although it is uncertain who these thinkers are,⁴⁶ their opinion seems consistent with the second version of materialist.⁴⁷

Aristotle claims along similar lines that states of the soul such as perceptions and emotions involve the body. For example, occurrences of seeing, hearing, and smelling “are neither bodies (being an affection or movement . . .) nor without bodies.”⁴⁸ Again, he argues in *De Anima* 1.1.403a1.6–25 that all the affections or emotions (πάθη) of the soul are “with a body,” because we are sometimes not excited or frightened even though we undergo violent or obvious things, and we are sometimes moved by small and feeble things when our body is in the sort of condition it is when we are angry. Further, we may have the affections of fear even when nothing frightening is occurring. He concludes that the affections are “enmattered accounts” (λόγοι ἔνυλοι), and later remarks that affections like fear and anger are inseparable from the natural matter of the animals in which they occur.⁴⁹

However, this materialist interpretation faces an apparent difficulty, because Aristotle treats the form, in distinction from the

⁴⁴ See L. A. Kosman, “Perceiving That We Perceive: *On the Soul* III, 2,” *Philosophical Review* 84 (1975): 499–519, esp. 518, who characterizes Aristotle as “a ‘materialist’ or, as we might now say (using “mind” as Descartes did), a mind-body identity theorist.” This is at least as far as perception is concerns. Cf. Wilkes, 125.

⁴⁵ *De Anima* 2.2.414a19–22.

⁴⁶ Bonitz, cited in R. D. Hick, *Aristotle. De Anima* (Cambridge: Cambridge University Press, 1907), 330, sees a parallel with the theory that the soul is a kind of attunement (ἁρμονία) of material components of the body, which is set forth by Simmias in Plato's *Phaedo* 85e3–86d3 and discussed by Aristotle in *De Anima* 1.4.407b30–408a5. However, Aristotle finds the attunement theory thoroughly defective, so it is unlikely that he is alluding to its proponents.

⁴⁷ Aristotle makes similar statements about material stuffs, for example, “the wet and the moist are not without body, but must be water or contain (ἔχειν) water”; *De Anima* 2.11.423a24–6.

⁴⁸ *De Sensu* 6.446b25–6.

⁴⁹ *De Anima* 1.1.403b16–17.

matter, as the nature or internal principle of change.⁵⁰ He mentions earlier theorists like Empedocles who claimed that earth, air, fire, and water were the nature and substance of things, but objects, "What is potentially flesh or bone does not yet have its own nature and does not exist by nature, until it acquires the form corresponding to its account, which we state when we define what flesh or bone is." Thus, the nature or internal principle of change must be the form rather than the matter. Again, "the form rather than the matter is nature, for each thing is said to be what it is when it is actually rather than when it is potentially." When we consider flesh or bone in so far as it is composed of material stuffs such as earth, air, fire, and water, we understand it as something only potentially flesh or bone. We understand why it is actually flesh or bone only when we consider it as acquiring the distinctive form of flesh or bone. Aristotle also observes that a human being comes from a human being.⁵¹ What develops out of a natural process is a being with a particular shape (μορφή). "Nature when it is spoken of as a coming-to-be is a path (ὁδός) to nature."⁵² There is a directedness in nature from a parent to an offspring of the same form. Natural processes thus have a goal-directed character which is not due to the material, but requires an internal principle distinct from them, namely the form.

Aristotle's discussions of particular states of the soul such as emotions and perceptions present related difficulties for the materialist interpretation which I can only briefly touch on here. For example, the discussion of the affections of soul in *De Anima* 1.1, which I mentioned earlier, offers what might be regarded as a model definition (ὅρος) of an affection of the soul: "being angry is a certain movement of such and such a body (or part or power) by this for the sake of this."⁵³ The definition is hylomorphic and teleological in character, specifying not only the bodily movement but also the end or goal. Some theorists give only a partial definition: A dialectician would define anger as, for example, "an appetite of returning pain for pain," whereas a natural scientist like Empedocles would define it as "a boiling of the blood and hot stuff around the heart." "The latter gives the matter, and the former the form and account; for this [that is, the appetite] is the account, and it must be in a matter of such and such a

⁵⁰ *Physics* 2.1.193a31–b8.

⁵¹ *Physics* 2.1.193b8–13.

⁵² *Physics* 2.1.193b13–14.

⁵³ *De Anima* 1.1.403a26–7.

kind if it is to exist." Aristotle's own view is evidently that the genuine natural scientist will define anger as a composite of matter and form.⁵⁴ Therefore, it would seem that the materialist interpretation we have been considering is inadequate, because it does not take into account the distinctive forms of psychic states such as the emotions.

Nonreductionist Materialism. In the face of such difficulties one might try to argue that Aristotle is a materialist in a subtler, less overt way, corresponding to contemporary nonreductionist materialism.⁵⁵ That is, when Aristotle says, for example, that the sensory power and the sense organ are the same, but different in essence, he means to distinguish psychological descriptions of living beings from descriptions of their material components. To ascribe a psychic state to an organism is to describe or understand its behavior in a manner different from explaining it in terms of a material cause. For example, psychological statements might be analyzed along functionalist lines,⁵⁶ for example, as in the aforementioned dialectical definition of anger as an appetite of returning pain for pain. According to functionalism, "something belongs to a kind *F* just in case it can perform the function definitive of that kind."⁵⁷ On this functionalist interpretation, what is essential to psychic states is that they play a specific role in the teleological explanation of the development or behavior of a living thing. A state like anger must be realized in a material event such as a boiling of the blood and hot stuff around the heart, but it is not essen-

⁵⁴ *De Anima* 1.1.403 a27-b9.

⁵⁵ An interpretation along these lines is defended by David Charles, *Aristotle's Philosophy of Action* (Ithaca: Cornell University Press, 1984), 2:13-34. The position is only a rough counterpart to modern nonreductionist materialism, which is usually characterized in terms of the irreducibility of scientific theories or laws, for example, of the irreducibility of psychology to neurophysiology. One theory or system of laws is reducible to another theory or system of laws if the former can be derived from the latter supplemented by suitable and credible "bridge laws." The proponent of this materialistic interpretation does not impute these ideas to Aristotle. Instead, the point is that we may describe or understand certain states of affairs in psychological terms, but such descriptions are not "reducible" in some other sense to material-cause explanations.

⁵⁶ I am here concerned with functionalism only in so far as it is allied with non-reductionist materialism. There is a version of functionalism defended by Christopher Shields, "The First Functionalist," in *Essays on the Historical Foundations of Cognitive Science*, ed. J.-C. Smith (Dordrecht: Kluwer, 1990), 19-33, and others which is ostensibly neutral concerning how psychic states are realized and what sort of causation they involve. I shall not consider this neutral version of functionalism.

tial to anger that it be realized in any specific material state. Aristotle on this interpretation could accept a thesis of "compositional plasticity": since no particular sort of composition is essential to psychic states, it is possible for the same type of psychic state to be realized in different ways.⁵⁷

According to nonreductionist materialism, one can provide a causally sufficient explanation of whatever happens, on the level of material bodies and their corporeal qualities, in terms of states of affairs involving material bodies with their conditions, dispositions, and alterations. In the case of a plant, growth can be explained in terms of material causes which result in more matter being added in certain proportionate mixtures. This can also be described on the psychological level as the plant nourishing itself and growing in order to survive and reproduce. Nonreductionist materialism will countenance such statements, although it might reinterpret the statement that "the plant nourishes itself in order to survive" as equivalent to, for example, the statement that "certain material processes within the plant result in survival, which is good for the plant." However, the theory will not admit that there is any real teleological cause at work which is independent of material causes, because this would entail a causal

⁵⁷ See Shields who argues that this general form of functionalism is illustrated, for example, in *Meteorology* 4.10.390a10–15: "All things are defined by their function: for [in those cases where] things are able to perform their function, each thing truly is [*F*], for example, an eye, when it can see. But when something cannot [perform that function], it is homonymously [*F*], like a dead eye or one made of stone, just as a wooden saw is no more a saw than one in a picture."

⁵⁸ Defenders of functionalism include (to name a few): Michael V. Wedin, *Mind and Imagination in Aristotle* (New Haven: Yale University Press, 1988); Christopher Shields, "The First Functionalist"; T. Irwin, "Aristotle's Philosophy of Mind," in *Companion to Ancient Philosophy: The Philosophy of Mind*, ed. S. Everson (Cambridge: Cambridge University Press, 1991), 56–83; and Martha Nussbaum and Hilary Putnam "Changing Aristotle's Mind," *Essays on Aristotle's De Anima*, ed. M. Nussbaum, and A. O. Rorty (Oxford: Clarendon Press, 1992), 27–56. However, the functionalist interpretation of Aristotle has been subjected to devastating (in my view) criticisms by Howard Robinson, "Aristotelian Dualism," *Oxford Studies in Ancient Philosophy* 1 (1988): 123–44; Herbert Granger, "Aristotle and the Functionalism Debate," *Apeiron* 23 (1990): 27–49; Heinaman, "Aristotle and the Mind-Body Problem"; Alan Code and Julius Moravcsik, "Explaining Various Forms of Living"; and Thomas M. Olschewsky, "Functionalism Old and New," *History of Philosophy Quarterly* 9 (1992): 265–86.

overdetermination of the plant's behavior. This theory can only accommodate a supererogatory or "as if" teleology.⁵⁹

Although subtle and ingenious interpretations have been developed along these lines, they all face the formidable difficulty that Aristotle expressly treats the soul as a real cause. This is true throughout his philosophy of soul, including plant psychology.⁶⁰ Plants possess the nutritive faculty (τὸ θρεπτικόν) or nutritive soul (ἡ θρεπτικὴ ψυχὴ), which is, according to Aristotle, "the first and most common power of soul, according to which life belongs to everything and which has as its functions reproduction and the use of nourishment."⁶¹ Aristotle maintains that the soul is not only a formal cause and a final cause but also an efficient cause: it is the primary source of locomotion (ὅθεν πρῶτον ἢ κατὰ τόπον κίνησις), and the cause of growth and decay as well as perception.⁶² On the level of nutrition, he argues that the soul is an efficient cause because explanations in terms of material efficient causes fail to explain even plant behavior. To appreciate Aristotle's argument we should keep in view the neo-Empodoclean chemistry⁶³ which he finds most plausible: Sublunary bodies are composed of four homogeneous elements—earth, air, fire, and water—each of which has two distinguishing qualities, which are drawn from each of the opposed pairs: hot or cold, and wet or dry.

⁵⁹ Charles, *Aristotle's Philosophy of Action*, 216, offers a similar account for human actions. We are permitted to say that Callicles struck Coriscus because he believed that Coriscus had insulted him and he wanted to return pain for pain. Alternatively, we could explain Callicles' behavior in terms of a chain of cause and effect from the boiling of the blood around Callicles' heart to his fist making contact with the chin of Coriscus. Given a certain state of affairs, such as the boiling of blood around Callicles' heart in certain circumstances, it would also be true that he wants revenge. However, to say that Callicles desires revenge is to redescribe or understand his behavior on another level, not to give a separate causal explanation of the outcome of his fist contacting Coriscus's chin. For this outcome has a sufficient condition on the level of material causes, and to admit Callicles' desire for revenge as an independent cause would over determine the outcome.

⁶⁰ See Alan Code, "Soul as Efficient Cause in Aristotle's Embryology," *Philosophical Topics* 15 (1987): 51–9. for a discussion of soul as efficient cause in Aristotle's embryology. Code and Moravcsik, "Explaining Various Forms of Living," also correctly emphasize the centrality of causation in Aristotle's psychology.

⁶¹ *De Anima* 2.4.415a23–5.

⁶² *De Anima* 2.4.415b21–8.

⁶³ Aristotle's chemistry departs from Empedocles in that he rejects the latter's thesis that love and hate are distinct principles causing the four otherwise inert elements to combine and separate. On the contrary, Aristotle holds that the elements have an innate tendency to move to their natural places. The elements move otherwise only as a result of accidental collisions.

Further, each element has a natural place: earth moves naturally downward, and fire moves upward, and so forth. According to this chemistry all things are a mixture of these elements, and all of their properties derive from the properties of the constituent elements. Aristotle argues that such a theory fails to answer three crucial questions about growth.

(1) *Why do organisms grow in particular directions?*⁶⁴ According to the neo-Empedoclean theory, the downward growth of the roots must be explained as due to the natural movements of the materials in the plant, namely, the downward movement of earth and the upward movement of fire. Aristotle objects that parts are different or the same in respect to their functions, and they are located where they are so that they can perform their functions. Although the roots of a plant correspond to the head (more precisely, the mouth) of an animal, the roots are only incidentally located at the bottom, where they can obtain nourishment for the plant.⁶⁵

(2) *What holds the organism's body together?*⁶⁶ "What is it that holds the fire and earth together even though they are moving in opposite directions? For they will be torn apart unless there is something which prevents it. But if there is, it is the soul, that is, the cause of growth and nutrition."

(3) *Why is growth a self-limiting process?*⁶⁷ Some theorists (like Heraclitus) explain growth as due to fire. Because it alone of the elemental bodies⁶⁸ is evidently nourished and grows, one might think that it is what is functioning when a plant or animal grows. "But fire is surely a collateral cause (συναίτιον) and not the cause without qualification. But the soul instead is the cause without qualification. For the growth of the fire is unlimited, as long as there is combustible stuff, but everything established by nature has a boundary (πέρας) and proportion (λόγος) of size and growth, and these belong to soul but not to fire, and to the principle (λόγος) rather than to the matter." Fire here serves as merely a collateral cause (συναίτιον) which cannot account for the self-limiting property of growth. A plant or animal has through its soul the innate capacity to attain and remain at a predetermined limit of mature growth, and this capacity is not reducible to the

⁶⁴ *De Anima* 2.4.415b28–416a5.

⁶⁵ They are at the bottom from the standpoint of the universe, but at the top if we define the top in terms of plant functioning.

⁶⁶ *De Anima* 2.4.416a6–9.

⁶⁷ *De Anima* 2.4.416a9–18.

⁶⁸ Retaining ἡ τῶν στοιχείων (bracketed in the Oxford Classical Text). The phrase is explanatory, to indicate that the bodies in question are elemental rather than natural bodies like plants.

material potentials in the organism's body.⁶⁹ Although the arguments so far considered pertain mainly to the nutritive faculty, it should also be noted that, on the level of animal behavior and human action, Aristotle treats the appetitive faculty as the efficient cause of movement.⁷⁰

It might be objected nonetheless that all efficient causes must be materially embodied for Aristotle, because a thing can produce movement only if it comes into contact with the thing it is moving.⁷¹ He maintains that a corporeal mover must make contact with a corporeal moved object, since both bodies have places and extended magnitudes.⁷² However, he does not agree that all movers must be in contact with what they move,⁷³ because he also recognizes incorporeal movers: apart from the great unmoved mover, all natural bodies capable of self-motion must contain something which primarily imparts movement without being moved (τὸ πρῶτως κινοῦν ἀκίνητον⁷⁴). The soul is for Aristotle such an unmoved mover.⁷⁵ The soul is not in motion as such (καθ' αὐτό), and one of the main reasons for this is that the soul is not a magnitude (μέγεθος).⁷⁶ Although movement does not occur in the soul, movement does proceed up to it and start from it.⁷⁷ Consequently, although the soul is an efficient cause of motion, it does not have spatial magnitude, and as such it cannot itself be a material being.⁷⁸

⁶⁹ Allan Gotthelf, "Aristotle's Conception of Final Causality," *Review of Metaphysics* 30 (1976): 226–54, persuasively cites the third passage concerning limited growth as evidence for his interpretation that Aristotle's final cause involves "irreducible potential for form" (irreducible, that is, to elemental potentials).

⁷⁰ *De Anima* 3.10.433a3 1–2.

⁷¹ See Charles, *Aristotle's Philosophy of Action*, 218.

⁷² *Generation and Corruption* 1.6.322b32–323a12.

⁷³ Although this is a requirement for bodies which move other bodies "in a natural way" (φυσικῶς); *Physics* 3.1.201a24–5. Aristotle clearly has in mind interactions of natural bodies.

⁷⁴ *Physics* 8.5.258a18–259a3.

⁷⁵ *De Anima* 1.3.406a3–4. See Heinaman, "Aristotle and the Mind-Body Problem," 98–9, for a full statement of this criticism. Shields, "The First Functionalist," 163–4, also argues persuasively that Charles does not establish his crucial premise that material effects must have material causes. The passage Charles cites, *Motion of Animals* 10.703a18–29, does not support this premise.

⁷⁶ *De Anima* 1.3.40712–3, 4.409a1–3.

⁷⁷ *De Anima* 1.3.408b15–16.

⁷⁸ This argument (assuming Leibniz's Law) is developed in greater detail by Shields, "The First Functionalist," 114–18; Heinaman, "Aristotle and the Mind-Body Problem," 84–8; and Robinson, "Aristotelian Dualism," 131. Shields also appeals to Aristotle's statement at *De Anima* 1.5.411b27 that "the whole soul is not divisible" (οὐ διαδετή), but the text is difficult: the οὐ is missing from several manuscripts (CUXE).

III

It appears, then, that Eduard Zeller was right to declare, "The soul, considered as the form and moving principle of the body, must itself be incorporeal; and here Aristotle contradicts the interpreters of his theory who represent it as being material in nature."⁷⁹ Yet, as we have seen, Aristotle also criticized the traditional dualistic theories of soul for failing to grasp that the soul is the actuality of the body, and that it must have a body of the appropriate kind. In addition, he applies the hylomorphic account to psychic states such as emotions and perceptions, which must also be embodied in the appropriate matter.

Supervenience (Epiphenomenalism). This intimate connection between psychic states and material correlates suggests that Aristotle's view might be a counterpart to the modern theory of *supervenience*: that mental states are nonphysical states supervening on physical states. There are different formulations of the concept of supervenience, but a widely accepted version is that a group of properties Ψ supervenes on a group of properties Φ if, and only if, necessarily any two things that have the same properties in Φ also have the same properties in Ψ . In other words, if a thing is indiscernible on the Φ level it must also be indiscernible on the Ψ level. If two persons have their brains in a certain state (for example, their C-fibers are firing) then they will also have the same mental state (for example, pain). There are many complications in supervenience theory regarding the sort of necessary link which obtains between the property in the supervenience base and the property which supervenes on it.⁸⁰ Moreover, the necessity is often explicated in terms of a possible-worlds semantics which is foreign to Aristotle. However, it does seem possible to formulate a counterpart of supervenience which would

⁷⁹ Eduard Zeller, *Aristotle and the Earlier Peripatetics*, trans. B. F. C. Costelloe and J. H. Muirhead (London: Longmans, Green, and Co., 1897; repr. New York: Russell and Russell, 1962), ii, 2, 4.

⁸⁰ One issue concerns whether the supervenience relation is weak (necessarily holding within a given possible world) or strong (necessarily holding between possible worlds). Influential discussions of the modern supervenience theory of mind are offered by Jaegwon Kim, "Psychophysical Supervenience," *Philosophical Studies* 41 (1982): 51-70; and "Downward Causation' in Emergentism and Nonreductive Physicalism," in *Emergence or Reduction? Essays on the Prospects of Nonreductive Physicalism*, ed. Ansgar Beckermann, Hans Flohr, and Jaegwon Kim (Berlin: Walter de Gruyter, 1993), 119-38, who defends the strong version of supervenience. Both Shields "The First Functionalist," and Michael V. Wedin, "Aristotle on the Mechanics of Thought," *Ancient Philosophy* 9 (1989): 67-86, impute a counterpart of the strong version of supervenience theory to Aristotle.

have been intelligible to him. The affections of soul could be said to supervene on alterations of the body in the sense that if persons are in the same material state (for example, if the blood was boiling in a particular way around their hearts) they necessarily experience the same psychic affection (for example, anger). On this interpretation, when Aristotle says that the soul is the substantial form or actuality of the body, he means that the soul as a whole supervenes on the body as a whole. Given that the body is in a specific condition, the soul must also be in a corresponding specific condition: it cannot be otherwise.⁸¹

The supervenience interpretation can account for why Aristotle rejects materialism as well as Platonic dualism in as much as it requires that psychic states differ from corporeal states, while requiring that psychic states be realized in "appropriate matter."⁸² However, the supervenience theory leaves unresolved the crucial issue of psychic causation. Many, if not most, modern supervenience theorists embrace a version of epiphenomenalism according to which psychic states supervene on material states but play no causal role on their own.⁸³ The implication that the psychological realm is determined entirely from the bottom up makes supervenience attractive to modern philosophers, because it suggests a way in which we can have a complete physicalistic explanation of human behavior and still evade the thorny objections raised by dualists. However, as we have seen, Aristotle maintains that souls are real efficient causes, even on the level of plant psychology. Moreover, all self-moving animals have souls which operate as unmoved movers. Human beings act on the basis of thought and choice. These causal claims cannot be reconciled with an epiphenomenalist supervenience interpretation.⁸⁴

⁸¹ On this interpretation any state of the soul which is an actualization of a state of the body supervenes on that state. However, there may be particular states of the soul (for example, thoughts) which do not supervene on any particular corporeal states. See *De Anima* 2.1.413a3–9. Still, on this interpretation the soul as a whole, together, with all its particular states, supervenes on the body as a whole, together with all its particular states.

⁸² See *De Anima* 2.2.414a25–7.

⁸³ See Kim, "Downward Causation' in Emergentism and Nonreductive Physicalism," 47: "If this be epiphenomenalism, let us make the most of it."

⁸⁴ Christopher Shields, "Soul and Body in Aristotle," *Oxford Studies in Ancient Philosophy* 6 (1988): 134 n. 53, notes the difficulty a nonepiphenomenalist version of supervenience theory entail causal over determination of bodily movements, but he does not offer a solution.

IV

Emergence. This problem may be surmounted by another interpretation of Aristotle, which shares some features with the supervenience interpretation. According to the emergence interpretation, "the soul of a living thing is not an organization of bodily parts, but rather something which supervenes on bodily parts when they have been organized in a certain way."⁸⁵ The attractiveness of this interpretation may be appreciated by contrasting it with another view which Aristotle himself criticizes: namely, the theory that the soul is a sort of attunement (ἁρμονία).⁸⁶ According to this theory⁸⁷ the attunement of the body is a certain blend (κρᾶσις), proportion (λόγος), or combination (σύνθεσις) of opposites (hot and cold, wet and dry) which are mixed together. One of Aristotle's main objections to this theory is that "an attunement (ἁρμονία) does not impart motion, but nearly everyone ascribes this to the soul."⁸⁸ He relates this view to Empedocles' theory that each of the bodily parts is what it is because of a certain proportion of elements, and asks, "is the soul the proportion, or is it instead something different which comes to be in (ἐγγίνεται) the parts?"⁸⁹ The soul *qua* form is not a mere arrangement of material components. Rather it is a causal power that comes to be in the body

⁸⁵ Heinaman, "Aristotle and the Mind-Body Problem," 90. See also Robinson "Aristotelian Dualism," and Theodore Scaltsas, "Biological Matter and Perceptual Powers in Aristotle's *De Anima*," *Topoi* 15 (1996): 25–37. Victor Caston, "Epiphenomenalisms: Ancient and Modern," *The Philosophical Review* 106 (1997): 309–63, gives the most thorough and rigorous explication of the emergence interpretation of Aristotle. Although I had substantially finished this paper before I read Caston's essay, I found that we had independently arrived at a very similar understanding of emergence as an interpretation of Aristotle.

⁸⁶ *De Anima* 1.4.407b27–408a28.

⁸⁷ The theory is advanced in a similar version by the Pythagorean Simmias in Plato's *Phaedo* 85e3–86d4. Simmias' original version sounds like epiphenomenalist supervenience, because he says the attunement of a musical instrument is invisible and incorporeal, but it is located in a tuned instrument which is itself corporeal and composed of materials. Similarly, the body is held together at a certain tension between the extremes of hot and cold, and wet and dry, and the soul is a blend (κρᾶσις) and attunement (ἁρμονία) of these opposites when they are blended nobly and in measure. Although the soul is invisible and incorporeal, it depends entirely upon the condition of the body (cf. 92e4–93a10).

⁸⁸ *De Anima* 1.3.407b34–408a1. See also *Phaedo* 94c9–e95a2 for a similar criticism.

⁸⁹ *De Anima* 1.4.408a20–1.

when it has reached a certain level of organization. However, the soul depends on the physical features of matter, so that emergence theory differs from Platonic and Pythagorean dualism, as well as Cartesian dualism.

Alexander of Aphrodisias, the great commentator of Aristotle, offers a similar refutation of the attunement theory of soul, in his own work called *De Anima*:

When we say that the soul is a form which comes to be on (γινόμενον ἐπὶ) the mixture and blend of the bodies which underlie it, we should not suppose that it is an attunement. Even if the soul cannot exist apart from such a blend and mixture, it does not follow that they are the same. For the soul is not this sort of blend of bodies, which would be the attunement, but it is the power which has come to be on this sort of blend. It is analogous to the powers of medicinal drugs which are concentrated when several of the drugs are mixed together. For the harmony is the proportion and combination of things mixed together, but the power of the compound is not the proportion according to which they are mixed. And the soul is this sort of thing [that is, a power]. For the power and the form coming to be on (ἐπιγινόμενον) the blend of bodies according to this sort of proportion is a soul, but it is neither the proportion of the blend nor the combination.⁹⁰

Alexander's analogy is to a pharmaceutical cocktail fashioned by mixing drugs together, which has an enhanced power to cure the patient. The causal power of the mixture is not identical with the materials in the drugs nor with the proportion by which they are combined; rather it "comes to be upon" (ἐπιγίγνεται) these material properties. The soul stands in a similar relation to an organic body.

This theory of soul resembles certain modern versions of emergence according to which the mind or consciousness emerges from on a complex physical system. A modern theory of mind of this sort is defended by John Searle:

The brain causes certain "mental" phenomena, such as conscious mental states, and these conscious states are simply higher-level features of the brain. Consciousness is a "higher-level" or emergent property of the brain in the utterly harmless sense of "higher-level" or "emergent" in which solidity is a higher-level emergent property of H₂O molecules when they are in a lattice structure (ice), and liquidity is similarly a higher-level emergent property of H₂O molecules when they are, roughly speaking, rolling around on each other (water). Consciousness is a mental, and therefore physical, property of the brain in the sense in which liquidity is a property of systems of molecules.⁹¹

⁹⁰ Alexander of Aphrodisias, *De Anima*, ed. I. Bruns (Berlin, 1887), 24, 18–25, 4. Heinaman, "Aristotle and the Mind-Body Problem," 90, points out the similarity to his own interpretation.

Significantly, emergence theory also claims that the emergent macrostates are efficient causes in their own right. Hence this theory rejects epiphenomenalism.

It is tempting to see modern emergence theory as a counterpart to Aristotle's philosophy of soul. If the soul were understood as an emergent state of a natural body, we would have a plausible account of his hylomorphic claim that the soul is the actualization of the body, and that it is in one sense one with the body but in another sense different from it. An emergence psychology would also support Aristotle's holism: here the organism as a whole (as well as its individual organs) is in a sense more than the sum of its parts, because it possesses macroproperties which emerge from the properties of the part but are not reducible to them. Teleological directedness might qualify as such an emergent macroproperty. Finally, because emergence theory treats emergent macrostates as causal, there is a parallel with Aristotle's persistent claims that the soul (along with states of the soul) is a real cause: an efficient and final cause, and not merely a formal cause. The form of an organism can control and guide the growth and development and behavior of its parts. This ascribed capacity to control and guide might suggest that Aristotle means to reify the soul, that is, to treat it as a separate substance which acts in tandem with the body. But it is more accurate on the emergence interpretation to say a living organism has formal as well as material properties and that each makes a different causal contribution to the activities of the organism as a whole.⁹² The emergence approach seems to capture much that is distinctive in Aristotle's psychology. Nonetheless, in all candor, it

⁹¹ John Searle, *The Rediscovery of the Mind* (Cambridge: MIT Press, 1992), 14.

⁹² The emergence interpretation could also account for Aristotle's reluctance to move from the premise that the soul is a moving principle and that anger or pain is a movement of the heart, and that the soul is the cause of such movement (τὸ δὲ κινεῖσθαι ἐστὶν εἶναι ὑπὸ τῆς ψυχῆς, *De Anima* 2.4.408b7), to the conclusion that the soul itself is angry or afraid. He says, "to say that the soul is angry is as if one said that the soul weaves or builds a house. It is doubtless better not to say that the soul pities, learns, or fears, but that the human being does this with his soul"; *De Anima* 2.4.408b11–15. Although the soul is a cause of change it is not the subject in which these changes occur. Rather the acts are performed by the natural substance which has the soul. Similarly, on the modern emergence view, a human being (or a human brain) performs certain mental acts because it has a macro-state of consciousness, but the human (or the brain) is still the agent performing these acts.

must be conceded that emergence cannot accommodate Aristotle's final mystery—the immortality of the intellect.⁹³

Let us consider, however, whether emergence theory is a satisfactory interpretation of the rest of Aristotle's psychology. This obviously depends on whether there is a place for emergence in Aristotelian natural philosophy.⁹⁴ The most influential modern analysis of this concept was offered by C. D. Broad.⁹⁵ An explanation in terms of emergence presupposes two distinct levels of existence: a basal level and an emergent level. At each level there are entities with properties and causal relations. Whether a property is basal or emergent is relative to a framework of explanation. For example, a property such as being alive might be emergent in relation to certain chemical processes, but basal in relation to a higher-level psychological feature such as conscious awareness. Modern emergence theories of mind like John Searle's hold that mental properties are macroproperties of certain physical systems such as the brain. In general, a property *E* is an emergent feature of a physical system *S* with components $C_1, \dots, C_n$ in a certain complex relation *R*, provided that *E* results from the causal interactions of the components belonging to this system, and that *E* is novel in that it "cannot, even in theory, be deduced from the most complete knowledge of the properties of $C_1, \dots, C_n$ taken separately (that is in isolation or in other systems)."⁹⁶ Emergence theory, therefore, involves the following theses⁹⁷:

⁹³ John Searle, "Response: The Mind-Body Problem," in *John Searle and His Critics*, ed. Ernest Lepore and Rovert Van Gulick (Cambridge: Blackwell Publishers, Inc., 1991), 105–136, makes this point in his reply to Alan Code, "Aristotle, Searle, and the Mind-Body Problem," in *John Searle and His Critics*, ed. Ernest Lepore and Rovert Van Gulick (Cambridge: Blackwell Publishers, Inc., 1991).

⁹⁴ The following discussion is indebted to the comparison and contrast of Aristotle and John Searle in Code, "Aristotle, Searle, and the Mind-Body Problem."

⁹⁵ C. D. Broad, *The Mind and Its Place in Nature* (London: Routledge and Kegan Paul, 1925), 6, 1–9.

⁹⁶ This closely follows Ansgar Beckermann, "Supervenience, Emergence, and Reduction," in *Emergence or Reduction? Essays on the Prospects of Nonreductive Physicalism*, ed. Ansgar Beckermann, Hans Flohr, and Jaegwon Kim (Berlin: Walter de Gruyter, 1993), 103, who in turn follows Broad, *The Mind and Its Place*, 61. A great deal hinges on how "deducible" is understood here. Other versions of emergentism understand the emergent properties as "novel" in the sense that they cannot be "explained" or "predicted."

⁹⁷ This discussion is indebted to Kim, "Downward Causation' in Emergentism and Nonreductive Physicalism."

(1)*Basal materialism*: there is an ultimate basal level, consisting of material objects and their physical properties.

(2)*Holistic emergence*: when collections of objects on the basal level become interrelated in certain ways, the collections acquire certain properties on the emergent level; and the aggregates can acquire such properties only when the basal objects are related in such complex ways.

(3)*Irreducibility*: the emergent properties of systems are novel in the sense that they are not deducible from basal objects and their basal properties.

(4) *Causal efficacy*: emergent properties are themselves causally efficacious: physical systems possess causal powers which are not merely the sum of the causal powers of the components of the system.

According to thesis (2), underlying basal conditions—that is, the interrelationships of basal components—explain the emergence of the higher-level state. In this respect emergence theory presupposes supervenience, in that if any two systems are in the same physical state they must also be in the same mental state. However, contemporary proponents of emergence theory, such as John Searle, maintain that it is not dualistic, because it does not assert the existence of nonphysical states, but of higher-level physical properties of complex physical systems.⁹⁸ Thesis (3) distinguishes emergence theory from various forms of materialism (those which Broad called “mechanistic”), for physical aggregates are alleged to have holistic states which are not fully explainable in terms of lower-level data. For example, it is claimed that conscious processes cannot be fully explained in terms of biochemical and physiological occurrences in the brain. Thesis (4) distinguishes emergence theory from epiphenomenalism and materialism. For example, bodily movements can be explained as caused by desires and beliefs, which are emergent mental states.

In addition, emergence theory entails the following thesis:

(5) *Downward causation*: emergent states can cause changes on the basal level.

⁹⁸ John Searle, *The Rediscovery of the Mind*, 111–12. Although Searle does not mention Broad, his account of emergence is substantially the same as Broad's.

For example, a brain can bring about changes in its own basal-level neurophysiological properties.⁹⁹

Because emergence theory is committed to downward causation it seems to be a close counterpart to Aristotle, who, as we have seen, maintains that the soul is an efficient cause limiting and directing the movements of the material components of the body. However, there remains a difficulty for this interpretation which involves the notion of emergence itself. For according to theses (1) and (2) above, higher-level psychic properties emerge from a basal level of material properties. This thesis evidently conflicts with Aristotle's own claim that the soul exercises a causal power which cannot itself be explained in terms of more elementary powers in the living organism's body. Even in a plant, psychic causation is needed to explain why growth is directed, why opposed materials are held together, and why growth is self-limiting. The presence of such a psychic power cannot be explained as the mere result of the material components or their combination.

This point is made clearly by Alexander of Aphrodisias in his further critique of the attunement theory of the soul:

The doctrine that the soul is an attunement or combination based on an attunement of bodies is more often held by [theorists] who generate the

⁹⁹ The argument is due to Kim, "Downward Causation' in Emergentism and Nonreductive Physicalism," 136. According to theses (3) and (4) emergent states are causally efficacious irreducible states. Suppose higher-level state *E1*, which emerged from a basal-level condition *B1* is a cause of future states. Then it either causes a basal-level state *B** or it causes another emergent state *E2*. But *E2* can occur only if some basal-level condition *B2* occurs, from (1) and (2). Hence, higher-level states must bring about lower-level states in order to produce higher-level states. Thus, either way, emergent states must exercise downward causation on the basal material level. Kim also argues (less convincingly) in this essay that nonreductionist materialists generally are committed to downward causation. The implication that emergentism involves downward or top-down causation seems problematic to Kim (p. 137), who sees the combination of upward determination and downward causation of emergent properties as potentially incoherent. However, Searle, *The Rediscovery of the Mind*, 112, points out that emergence theories in fact take two forms: According to the weaker version, endorsed by Searle himself, emergent mental states have only causal powers which result from the causal interactions of the components of the physical system. According to a stronger version, rejected by Searle, emergent mental states also have independent causal powers (that is, which cannot be solely explained by the causal interactions of the physical components of the system). Such a view might allow for genuine freedom of the will, but Searle worries that it "would seem to violate even the weakest principle of the transitivity of causation."

soul out of a such mixture or combination of bodies. These include the Stoics, who say that it is breath (πνεῦμα) composed somehow from fire and air, and the Epicureans, who say that soul is combined from several different bodies. According to Plato, also, the substance of the soul [arises] out of a combination of things composed according to a certain proportion or ratio, as he says in the *Timaeus* [34e ff.]. The doctrine that the soul is an attunement is, as I said, held by those who say the foregoing things, rather than by the [theorist] who says that the soul is a state and a power and a form which comes to be on (ἐπιγινόμενον) this sort of blend and mixture of the simple bodies. For those who hold that these components themselves are somehow the soul also hold that it is from (παρά) the combination that the essence of soul belongs to the composition. If such a combination is an attunement, then it is from (παρά) the attunement that the composition will have the essence of soul. But the [theorist] who holds the soul is not without qualification the things brought together, but it is a power which comes to be on this sort of blend and mixture of the primary bodies, will maintain that the blend will possess a material proportion, but the essence of soul will not be due to the attunement and blend (as the previous thinkers assert) but due to the power which comes to be on it.¹⁰⁰

Although Alexander uses the participle ἐπιγινόμενον from the verb ἐπιγίγνεσθαι, “come to be on,” also translated as “supervene”—to describe the relation of soul and life to the material condition of attunement, he explicitly denies that soul and life arise from (παρά) the combination or attunement of material components. He thus rejects the view that the presence of the power is as such determined by materials reaching a certain level of complexity or organization.

Hence, although emergence theory more closely approximates Aristotle's view than any other modern counterpart, it shares with these modern theories the assumption that the ultimate ontological level of explanation consists of material objects and their physical properties. If consciousness does emerge, it must do so from this ontologically more basic level. Emergence reflects the modern viewpoint that features of the soul will be ultimately comprehensible only if they are determined in a bottom-up manner. This viewpoint is profoundly un-Aristotelian. Aristotle's philosophy of soul has a deep and recalcitrant top-down character, putting it odds with any currently popular counterpart in the philosophy of mind.

¹⁰⁰ Alexander, *De Anima*, 26, 13–30.

V

Epigenesis. This difficulty, however, suggests an alternative interpretation of Aristotle's claim that the immaterial soul supervenes on the body, which I shall call the *epigenesis* interpretation,¹⁰¹ from the verb ἐπιγίγνεσθαι used by Alexander of Aphrodisias in the above passage.¹⁰² According to this interpretation, the soul makes a distinct and indispensable causal contribution to the development and continuing existence of a living organism. The body itself, with its material constituents in complex combinations and dispositions, must also exist in a condition suitable to receive the contribution of soul. The Pythagoreans and Plato failed to take into account the indispensable role of the body. The epigenesis interpretation agrees that the soul can be present only if there is matter of sufficient complexity, but it also holds that psychic causation cannot be reduced to material causation. As Aristotle says, the material factors serve as a collateral cause (συναίτιον) which must be present but cannot by themselves account for the distinctive features of organisms, such as the self-limiting property of growth. The matter is a cause only in the sense of a *sine qua non*.¹⁰³ According to the epigenesis account the hylomorphic compound results from coordinated causal inputs: on the material level matter must be produced in a certain proportion; but, in addition, on the formal level a structure or organization must be superimposed upon the matter by an independent cause. On Aristotle's view this independent cause is a preexisting compound, such as the father in the case of an animal. The form of the offspring derives from the form of the parent. Sexual reproduction involves the replication of a form, and growth and survival the development and perpetuation of such a form in a suitable material base.

¹⁰¹ This interpretation is probably closest to that of Code and Moravcsik although they do not describe it in these terms.

¹⁰² Aristotle himself uses this verb in describing how pleasures come to be upon activities in the sense of completing or fulfilling them: "Pleasure completes the activity not as the corresponding permanent state does, by its immanence, but as an end which supervenes (ἐπιγγνόμενον) as the bloom of youth does on those in the flower of their age"; *Nicomachean Ethics* 10.4.1174b31-3, Ross translation; cf. 11.2.1104b4. Aristotle also speaks of form as supervening or "coming to be upon" the matter; *Metaphysics* Z.11.1036a31-b7.

¹⁰³ See *Physics* 2.9.200a7-10, *Parts of Animals* 1.1.640b22-8, *Generation of Animals* 11.1.734b28-30.

This interpretation is supported by Aristotle's account of sexual reproduction in the *Generation of Animals*: "what the male contributes to sexual generation is the form and the principle of movement, while the female contributes the matter."¹⁰⁴ The principle through which a thing is ensouled or alive comes from the male semen.¹⁰⁵ before the organism is born the formal principle is present as a power (δύναμις). For in sexual reproduction the animal is constituted out of the matter from the mother by "the power from the male and present in the semen."¹⁰⁶ The form operates via movements which are present in the semen and later in the blood of the embryo.¹⁰⁷ Reproduction involves the transfer of movement from the male parent through its residue (semen) to the female residue (menses) and is perpetuated in the fetus and offspring.¹⁰⁸ In order for the power to be operative the organism must contain vital heat which is the locus of the animating principle¹⁰⁹ and source of motion.¹¹⁰ This vital heat is indispensable for the concoction of the semen,¹¹¹ for the integration and constitution of the menstrual fluid into a fetus,¹¹² and for the concoction of nutrients throughout the life process.¹¹³ The movements are inherently proportional, self-limiting, and directive. The proportionality is due to the parent's nature.¹¹⁴ The vital heat thus provides a physiological explanation of how the form is imposed on the matter. However, it does not provide the full explanation. The distinctive form of the progeny is determined by the form of the father.¹¹⁵

The three different versions of the immaterialist interpretation of Aristotle's psychology may be represented by the following three diagrams (arrows indicating direction of causation):

¹⁰⁴ *Generation of Animals* 1.20.729a9–11.

¹⁰⁵ *De Anima* 2.3.737a32–3.

¹⁰⁶ *Generation of Animals* 1.19.727b14–16.

¹⁰⁷ *Generation of Animals* 2.4.740b32–3.

¹⁰⁸ *Generation of Animals* 2.3.737a1 8–22.

¹⁰⁹ *Generation of Animals* 3.1.751b6.

¹¹⁰ *Generation of Animals* 2.1.732a19–20.

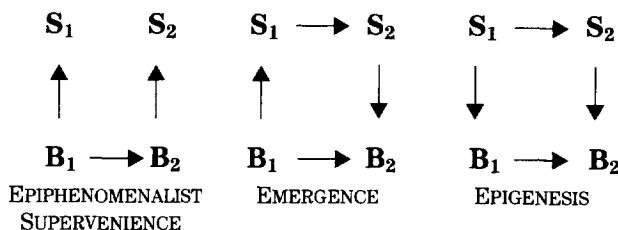
¹¹¹ *Generation of Animals* 2.4.739a11–13.

¹¹² *Generation of Animals* 2.4.739b20–33.

¹¹³ See *De juventute* 4.469b6–13; *Generation of Animals* 3.11.762b7–8; 4.1.766b14–15, 5.6.786a17.

¹¹⁴ *Generation of Animals* 2.6.743a26–9, 34.

¹¹⁵ See Michael Bradie and Fred D. Miller, Jr., "Teleology and Natural Necessity in Aristotle," *History of Philosophy Quarterly* 1 (1984): 133–46; Code (1987), and John M. Cooper, "Metaphysics in Aristotle's Embryology," *Proceedings of the Cambridge Philological Society* 214 (1988): 14–41 on Aristotle's embryology.



The epigenesis interpretation alone has no recent counterpart, since contemporary philosophers of mind favor bottom-up determination of mental states. However, the epigenesis view seems closest to Aristotle's view because he clearly holds that the soul has a causal effect on the body and that material causes provide only a necessary condition for the hylomorphic compound.

The epigenesis interpretation helps to explain why Aristotle insists that a living organism can come to be with a soul only if it is brought into existence by another substance which has this soul in actuality: he says, "the movement of nature exists in the product itself, issuing from another nature which has the form in actuality (*ἐνεργεία*)."¹¹⁶ This is why he insists that the movement involved in sexual reproduction is "the movement set up by the male parent, who is in actualization (*ἐντελεχεία*) what that out of which the offspring is in potentiality (*δυνάμει*)."¹¹⁷ Again, his rejection of evolution and insistence that species are eternal¹¹⁸ are easier to understand on the epigenesis view. The chain of actually existing forms can be traced backward *ad infinitum*.

This interpretation also has the distinct advantage that it, alone, seems able to accommodate Aristotle's claims about the intellect. As we have seen, in several places in *De Anima*, Aristotle claims or implies that the intellect—or at least the productive intellect—can exist separately from the body. In addition, in the *Generation of Animals* he holds that the powers of the soul—nutritive, perceptive, and cognitive—all develop from a potential to an actual state, and that the faculties whose activity is essentially corporeal cannot enter from the outside. He adds, "It remains then for the intellect alone so to enter and alone to be divine, for no bodily actuality has any connection with the actuality of the intellect."¹¹⁹ Only on the epigenesis interpretation

¹¹⁶ *Generation of Animals* 2.1.735a4.

¹¹⁷ *Generation of Animals* 2.1.734b34–6.

¹¹⁸ *Generation of Animals* 2.1.731b35–732a1.

¹¹⁹ *Generation of Animals* 2.3.736b28–30.

is this super-injection of intellect a possibility, because this interpretation assumes that the form of the organism is immaterial. But it also offers a nondualistic interpretation of the suggestion that the intellect is an actualization of the body in the way that a sailor is the actualization of a ship. In conclusion, the epigenesis interpretation would seem to have this decisive advantage over its competitors: that it takes fully into account Aristotle's claims about the soul as an efficient cause of biological processes and animal behavior, while accommodating Aristotle's claims that the intellect is an independent, and even separable principle.¹²⁰

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